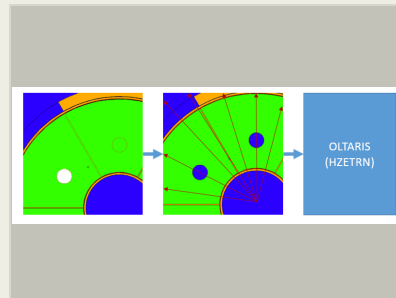
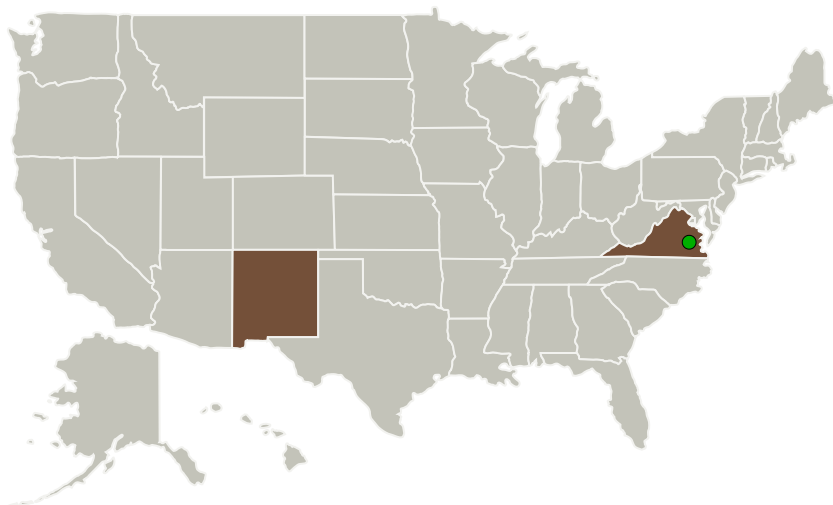




Project Introduction

NASA uses computer aided design (CAD) capabilities to produce space vehicle designs. One aspect of the vehicle design is utilizing enough shielding to minimize dose on personnel. Currently, there is no set process for using NASA CAD models in NASA's transport code, HZETRN. XL Scientific will develop a ray tracing tool that converts STEP files to an XML input for OLTARIS, which contains HZETRN. This tool will carry geometric, material and density information and automate the process. By doing so, less human intervention will be necessary to run radiation transport problems and NASA personnel can produce results at a much faster rate. This effort will analyze the properties of a poorly defined and well defined CAD model to create the foundations of a process for automating the entire CAD to transport process. Success in this task will mitigate months of human effort per spacecraft design. XL Scientific has produced CAD/radiation transport capabilities in the past and have identified additional uses for CAD integration in radiation transport codes. This innovation is not limited to calculating dose on personnel; one major additional function is to calculate dose on electronics for other potential NASA applications.

Primary U.S. Work Locations and Key Partners



Process and Tool Innovation for CAD Integration with OLTARIS, Phase I

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

Process and Tool Innovation for CAD Integration with OLTARIS, Phase I

Completed Technology Project (2016 - 2016)



Organizations Performing Work	Role	Type	Location
XL Scientific, LLC	Lead Organization	Industry	Albuquerque, New Mexico
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
New Mexico	Virginia

Project Transitions

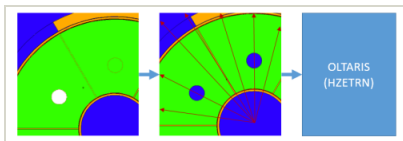
▶ **June 2016:** Project Start

✓ **December 2016:** Closed out

Closeout Documentation:

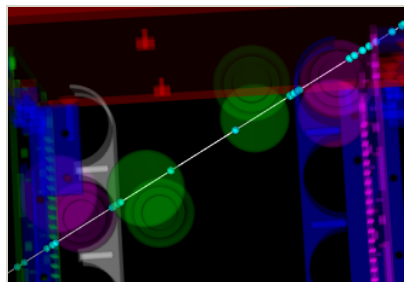
- Final Summary Chart(<https://techport.nasa.gov/file/140289>)

Images

**Briefing Chart Image**

Process and Tool Innovation for CAD Integration with OLTARIS, Phase I

(<https://techport.nasa.gov/image/133342>)

**Final Summary Chart Image**

Process and Tool Innovation for CAD Integration with OLTARIS, Phase I Project Image

(<https://techport.nasa.gov/image/126357>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

XL Scientific, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

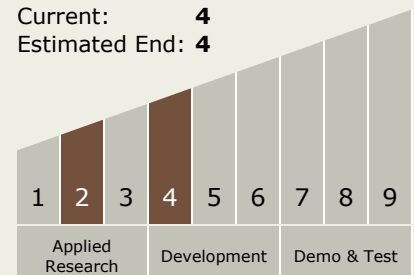
Carlos Torrez

Principal Investigator:

Paul Thelen

Technology Maturity (TRL)

Start: 2
Current: 4
Estimated End: 4





Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.5 Radiation
 - └ TX06.5.4 Space Weather Prediction

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System